Unit Outline (Higher Education)

Institute / School:	Institute of Education, Arts & Community
Unit Title:	NUMERACY AND DIGITAL TECHNOLOGY
Unit ID:	EDMAS6029
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	070101

Description of the Unit:

This course is designed to provide Pre-Service Teachers (PSTs) with a sound understanding of mathematics in the lives of babies, toddlers, and young children. It will explore theoretical, cultural, historical, and current approaches to teaching play-based mathematics and technology. It aims to build personal understanding of their own values and preferences toward mathematics and technology in their lives, and explore the use of digital technology as pedagogical tools. The student will explore regulatory requirements and importance of family preferences and expectations, as well as ways to document and share children's mathematical learning with families. Throughout the course, the students will build a resource of learning experiences to meet a variety of mathematical content that is informed by current curricula framework (EYLF/VEYLDF). PSTs will explore how these learning experiences can be modified to meet the needs of a range of children, including different ages, abilities, childrens interests, inclinations to explore, play and curiosities and funds of knowledge and their sense of fun and playfulness.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory					✔	
Intermediate						
Advanced						

Learning Outcomes:

Knowledge:

K1. Examine and review historical and current teaching approaches for teaching early childhood mathematics and technology

K2. Research cultural approaches to teaching mathematics to young children

K3. Make connections between teachers' actual and perceived mathematical abilities, confidence levels and their pedagogical practices.

K4. Explore how children's positive mathematical experiences can build self-efficacy and wellbeing

K5. Identify ways to explore technology with children and as a tool for pedagogical practice.

Skills:

S1. Observe and identify the mathematics in children's interactions during individual, small group, and whole group experiences

S2. Identify technologies to facilitate children's mathematical learning

S3. Build personal and children's understanding of mathematical concepts and terminology.

S4. Share information with families on children's mathematical and technological learning.

Application of knowledge and skills:

A1. Build a collection of play-based learning experiences that can be used to teach positive mathematical and technological content and learning in an early childhood setting.

A2. Modify learning experiences to meet the interests, strengths, inclinations to explore play, curiosities, funds of knowledge, sense of fun and playfulness, of a diverse range of children.

A3. Design learning opportunities that incorporate mathematics into other curriculum areas

Unit Content:

Topics to be covered may include:

- Historical and current teaching practices in early childhood mathematics and technology
- How young children learn mathematics through play and everyday experiences
- Age appropriate mathematical terminology and experiences
- Personal values and biases toward mathematics
- Planning for learning including those with diverse linguistic, religious and socioeconomic backgrounds
- Building children's confidence and wellbeing
- Sourcing and planning with natural and recycled manipulatives
- Linking learning experiences to current curricula frameworks
- Use of technology in young children's learning
- Sharing children's learning with families
- Identifying and connecting with the mathematical content in storybooks

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		**Development and acquisition of FEDTASKS in the Unit**	
		Learning Outcomes (KSA)	**Assessment task (AT#)**
FEDTASK 1 Interpersonal	Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills • Demonstrating mastery of working respectfully in cross-cultural and diverse teams.	S4	AT2
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. • Creating and sustaining a collegial environment • Demonstrating a high level of self -awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning	K1,K2, K3, K4, S3, A1, A3	AT1

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally • Collating, managing complex data, accessing and using digital data securely • Receiving and responding professionally to messages in a range of professional digital media • Contributing competently and professionally to digital teams and working groups • Participating at a high level in digital learning opportunities	S2	Not applicable
FEDTASK 5 sustainable and Ethical Mindset	Students at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in: • Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts • Professionally committing to the promulgation of social responsibility • Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others • Generating, leading and implementing required actions to foster sustainability in their professional and personal life.	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, K5, S3, A3 APST 1.2, 1.3, 6.2, 7.3,	Explore the role of the teacher in teaching early childhood mathematics, drawing connections to their own values and biases around mathematical understandings and teaching mathematics in cross-curricular ways in early childhood.	Poster Presentation	40-60%
K2, S1, S2, S3, S4, A1, A2, A3; APST: 1.2, 1.3, 2.1, 2.2, 2.6, 3.2, 3.4, 7.3.	Using provided scenarios, report on the range of mathematical and or technology concepts the children may be exploring and discuss ways teachers are supporting the children's learning in these areas. Plan a range of learning experiences that focus on mathematical and technology development that can follow from the provided scenario. Planning should consider cross curricular opportunities and how to share information with families/caregivers.	Report and planning	40%-60%

Alignment to the Minimum Co-Operative Standards (MiCS)

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students

2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

MICS Mapping has been undertaken for this Unit No

Date:

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool

Professional Standards / Competencies:

Australian Professional Standards for Teachers (AITSL) - Graduate Teacher: Initial

Attribute	Assessed	Level
Professional Knowledge		
1. Know students and how they learn		
1.2 Understand how students learn Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.	Yes	Introductory
1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistic, cultural, religious and socioeconomic backgrounds.	Yes	Introductory
2. Know the content and how to teach it		
2.1 Content and teaching strategies of the teaching area Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area.	Yes	Introductory
2.2 Content selection and organisation Organise content into an effective learning and teaching sequence.	Yes	Introductory
2.5 Literacy and numeracy strategies Know and understand literacy and numeracy teaching strategies and their application in teaching areas.	Yes	Introductory
2.6 Information and Communication Technology (ICT) Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.	Yes	Introductory
Professional Practice		
3. Plan for and implement effective teaching and learning		
3.2 Plan, structure and sequence learning programs Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.	Yes	Introductory
3.4 Select and use resources Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning.	Yes	Introductory
Professional Engagement		
6. Engage in professional learning		

6.2 Engage in professional learning and improve practice Understand the relevant and appropriate sources of professional learning for teachers.	Yes	Introductory
7. Engage professionally with colleagues, parents/carers and the community		
7.3 Engage with the parents/carers Understand strategies for working effectively, sensitively and confidentially with parents/carers.	Yes	Introductory